

PATENT CLAIMS

What is claimed is:

1. A biaxially oriented opaque polypropylene multilayered film made of a base layer and at least one first intermediate layer positioned thereon and a first surface layer positioned on the first intermediate layer, characterized in that the first intermediate layer has essentially no vacuoles and the first surface layer contains at least 80 weight-percent of a propylene-ethylene copolymer, which has an ethylene content from 1.2 to < 2.8 weight-percent and a propylene content of 97.2 - 98.8 weight-percent and a melting point in the range from 145 to 160°C and a melting enthalpy of 80 to 110 J/g and the base layer contains vacuoles and has a density in the range from 0.35 to 0.6 g/cm³ and contains no additives whose density is above the density of the polypropylene and the density of the overall film is in the range from 0.4 to 0.7 g/cm³.
2. A biaxially oriented opaque polypropylene multilayered film made of a base layer and at least one first intermediate layer positioned thereon and a first surface layer positioned on the first intermediate layer, characterized in that the first intermediate layer has essentially no vacuoles and the first surface layer contains at least 80 weight-percent of a propylene-ethylene copolymer, which has an ethylene content from 1.2 to < 2.8 weight-percent and a propylene content of 97.2 - 98.8 weight-percent and a melting point in the range from 145 to 160°C and a melting enthalpy of 80 to 110 J/g

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and the base layer contains vacuoles and has a density in the range from 0.4 to 0.9 g/cm³ and additionally contains TiO₂ and the density of the overall film is in the range from 0.45 to 0.95 g/cm³.

3. The film according to Claim 1 or 2, characterized in that the propylene-ethylene copolymer contains 1.5 to 2.3 weight-percent ethylene and has a melting point in the range from 150 to 155°C and a melting enthalpy of 90 to 100 J/g.
4. The film according to one of Claims 1 through 3, characterized in that the surface layer additionally contains propylene homopolymer, propylene copolymer, and/or propylene terpolymer, these polymers being different from the first propylene copolymer and the propylene content of these polymers being at least 80 weight-percent, and their proportion in the surface layer being at most 20 weight-percent, preferably 2 to 10 weight-percent.
5. The film according to one of Claims 1 through 4, characterized in that the thickness of the first surface layer is 0.5 to 3 µm.
6. The film according to one of Claims 1 through 5, characterized in that the surface of the first surface layer is pre-treated using corona, plasma, or flame.
7. The film according to one of Claims 1 through 6, characterized in that the base layer made of propylene homopolymer contains 5 to 30 weight-percent vacuole-initiating fillers.

8. The film according to one of Claims 1 through 7, characterized in that the first intermediate layer is made of at least 50 weight-percent, preferably 80 to 90 weight-percent propylene homopolymer and additionally contains 1 to 15 weight-percent TiO_2 .
9. The film according to one of Claims 1 through 8, characterized in that a second surface layer is applied to the diametrically opposing side of the base layer and the film is four-layered.
10. The film according to one of Claims 1 through 9, characterized in that the second surface layer contains at least 80 to <100 weight-percent of a polymer mixture, the mixture comprising propylene polymers having at least 80 weight-percent propylene units and a polyethylene and the mixture containing 10 to 50 weight-percent of the polyethylene in relation to the weight of the mixture.
11. The film according to one of Claims 1 through 10, characterized in that the first and/or the second surface layer contains an antiblocking agent.
12. The film according to one of Claims 1 through 11, characterized in that a second intermediate layer is applied between the base layer and the second surface layer and the film is five-layered.
13. The film according to one of Claims 1 through 12, characterized in that the second intermediate layer contains 5 to 20 weight-percent vacuole-initiating particles.
14. The film according to one of Claims 1 through 13,

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characterized in that the base layer additionally contains antistatic agent and lubricant.

15. The film according to one of Claims 1 to 14, characterized in that the first and/or the second intermediate layer contains antistatic agent and/or lubricant.
16. The film according to one of Claims 1 through 15, characterized in that the first and/or the second surface layer additionally contains antiblocking agent and/or lubricant and/or antistatic agent.
17. The film according to one of Claims 1 to 16, characterized in that the first surface layer is provided with printing which does not cover its entire area.
18. A use of the film according to one of Claims 1 through 17 for the in-mold labeling when injection molding containers from thermoplastic, preferably polyethylene or polypropylene, characterized in that the side of the film diametrically opposite the first surface layer faces toward the container during labeling and the first surface layer forms the outside of the label.